

What is claimed is:

1. A method of synthesizing double-walled carbon nanotubes, the method comprising:

embedding catalyst metal particles composed of Fe, Co, Ni, Mo or an alloy of the elements and having a size of 2-5 nm in nano pores of a support material powder composed of MgO, Al<sub>2</sub>O<sub>3</sub>, zeolite or silica;

sintering the support material powder in which the catalyst metal particles are embedded; and

forming the double-walled carbon nanotubes by supplying a carbon source gas to the catalyst metal particles embedded in the support material powder and reacting the carbon source gas with the catalyst metal particles.

2. The method of claim 1, wherein the embedding the catalyst metal particles in the nano pores of the support material powder comprises:

making a first solution including the catalyst metal particles;

mixing the first solution with the support material powder to form a second solution;

removing moisture included in the second solution; and

pulverizing the support material powder including the catalyst metal particles to form the support material powder in which the catalyst metal particles are supported.

3. The method of claim 2, wherein the removing the moisture is performed by a vacuum oven for 15 hours at a temperature of 150 °C.

4. The method of claim 2, wherein if the second solution is a solution containing Fe, Ni or Co, Mo, and MgO, a molar ratio of Fe, Ni or Co : Mo : MgO is 0.7-1 : 0.1-0.3 : 10-13,

if the second solution is a solution containing Fe or Ni, Mo, and MgO, a molar ratio of Fe : Ni : Mo : MgO is 0.7-1 : 0.1-0.3 : 0.1-0.3 : 10-13, and

if the second solution is a solution containing Fe or Co, Mo, and MgO, a molar ratio of Fe : Co : Mo : MgO is 0.7-1 : 0.1-0.3 : 0.1-0.3 : 10-13.

5. The method of claim 1, wherein the sintering is performed in air atmosphere for 6-12 hours at a temperature of 700 - 900 °C.

6. The method of claim 1, wherein the forming the double-walled carbon nanotubes comprises:

loading the support material powder embedding the catalyst metal particles in a reactor;

maintaining the temperature of the reactor including the support material powder at 700-1100 °C; and

10 supplying a carbon source solution selected from the group consisting of alcohol, benzene, hexane, THF (tetra hydrofuran) and propanol, to an inside of the reactor in a gas form using an evaporator.

7. The method of claim 1, wherein the forming the double-walled carbon nanotubes comprises:

loading the support material powder embedding the catalyst metal particles in a reactor;

maintaining the temperature of the reactor including the support material powder at 700-1100 °C; and

20 supplying a carbon source gas selected from the group consisting of acetylene, methane, ethylene, propane and CO to an inside of the reactor.